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IN BRIEF

MULTIPLE SCLEROSIS

Evidence for B-cell exchange across the blood–brain barrier

In patients with multiple sclerosis (MS), a restricted pool of B cells are shared between the cerebrospinal fluid (CSF) and blood, according to a new study. Sequencing of IgG heavy chain genes was used to identify B-cell repertoires, and revealed clonally related B-cell populations on both sides of the blood–brain barrier. Moreover, diversification of different B-cell populations occurred in the blood versus the CSF, indicating that the autoimmune response to CNS antigens is triggered and driven in both the brain and the periphery.

Original article von Budingen, H.-C. *et al.* B cell exchange across the blood–brain barrier in multiple sclerosis. *J. Clin. Invest.* doi:10.1172/JCI63842

MIGRAINE

Migraine in women associated with progression of deep white matter brain lesions

Studies indicate a link between migraine and the presence of ischaemic lesions in the brain. Palm-Meinders *et al.* assessed structural brain changes in 203 patients with migraine 9 years after initial MRI. No difference in lesion progression was observed in men with migraine compared with men without migraine. However, women with migraine showed significantly more progression of deep white matter hyperintensities than did control women over the 9-year period, suggesting that women are more susceptible to migraine-induced white matter changes than are men.

Original article Palm-Meinders, I. H. *et al.* Structural brain changes in migraine. *JAMA* 308, 1889–1897 (2012)

NEUROIMMUNOLOGY

Antigen-loaded microparticles—a novel tool to induce T-cell tolerance in autoimmunity?

In autoimmune disorders such as multiple sclerosis (MS), T cells can be aberrantly activated after recognition of self antigens in the form of peptides. Using a mouse model of MS, Getts *et al.* show that injection of microparticles loaded with myelin peptides induces long-term T-cell tolerance, preventing disease onset and modifying the disease course. The tolerogenic effect exploited a natural pathway of debris clearance that involves microparticle uptake by macrophages expressing the scavenger receptor MARCO. Regulatory T cells and T-cell anergy were also required for tolerance induction.

Original article Getts, D. R. *et al.* Microparticles bearing encephalitogenic peptides induce T-cell tolerance and ameliorate experimental autoimmune encephalomyelitis. *Nat. Biotechnol.* doi:10.1038/nbt.2434

STROKE

Exercise improves poststroke cognitive function

A combination of aerobic and resistance training in patients who have experienced a stroke is associated with improvements in cognitive function, according to a recent study. In 41 patients with poststroke motor impairments who were assigned to a 6-month exercise programme, training was associated with significant improvement in cognition and reduction in the proportion of individuals meeting the threshold criteria for mild cognitive impairment.

Original article Marzolini, S. *et al.* The effects of an aerobic and resistance exercise training program on cognition following stroke. *Neurorehabil. Neural Repair* doi:10.1177/1545968312465192